PART VI.

CHEMICALS AVAILABLE AND THEIR COST.

(1) *Lime.*

Price of lime.—Lime, which is a very important factor, is procurable in or near all the places which have been proposed as possible mill sites.

In Burma lime can be purchased in Rangoon at annas 5 per cubic foot, it being procured from Moulmein, Kyanksé and Toungoo. In Pyinmana locally prepared lime costs 8 annas per 100 lbs. In Arakan coral-lime sells at 14 annas per cwt., being obtained from Kyanksé.

On the West Coast excellent shell-lime costs 12 annas per cwt.

(2) *Caustic soda.*

Price of Caustic soda.—It will be necessary to import caustic soda from Europe.

The price paid now by Indian mills varies from Rs. 150 to Rs. 165 per ton. In 1898, the price *ex*-ship Calcutta was as high as Rs. 174 per ton, while Sindall's figure in Rangoon for 1906 was Rs. 159 per ton.

(3) *Sulphur.*

Prices of Sulphur.—The following are the prices for 1909 quoted by the Collectors of Customs, Calcutta, Madras, Karachi and Bombay :—

	Roll sulphur, per ton *ex*-ship.	Rough sulphur, per ton *ex*-ship.
	R a. p.	*R a. p.*
Calcutta . . .	93 13 0	92 8 0
Madras	..	89 12 0
Karachi	93 4 0	84 4 0
Bombay . . .	91 8 0	..

Sindall in his report quotes the prices of sulphur from Sicily landed in Rangoon in 1906 at Rs. 99-12 per ton.

(4) *Bleaching powder.*

Price of Bleaching powder.—The relatively high cost of Bleaching powder makes it absolutely necessary that the percentage of bleach utilised should not exceed 12 per cent. of the weight of the raw material in a dry state. The price landed in Calcutta in 1911 was Rs. 125 per ton; in Rangoon the price would be slightly higher and in Bombay slightly less.

(5) *Soda ash, China clay and Alum.*

Price of Soda ash.—The price of Soda ash in Calcutta is about Rs. 100 and in Rangoon Rs. 110 per ton c. i. f.

Price of China clay.—The price of China clay in Calcutta is about Rs. 45 per ton c. i. f.

Price of Alum.—The price of Alum in Calcutta is about Rs. 100 per ton c. i. f.

(6) *Coal.*

Coal is procurable in large quantities from the Raneegunge Coal Fields in Bengal. The price fluctuates enormously: in 1909, it was about Rs. 3 at the pit mouth and as much as Rs. 10 per ton in Calcutta, while Sindall's figure for Rangoon is Rs. 15 per ton. In Bombay the cost of coal comes to Rs. 15 to Rs. 18 per ton.

(7) *Freight.*

Freight of bamboos.—Freight rates by sea vary from time to time, so it is not possible to give figures of any great value; they can, however, always be obtained from large shipping agents.

Freights quoted by the Agent for Government Consignments, Calcutta, for bamboos from Rangoon to Calcutta, are as follows:—

Steamer freight Rs. 10 per ton of 50 cubic ft.

Port and shipping charges Rs. 2-4 per ton.

Freight for Chemicals.—Freight of Chemicals, from Liverpool to Calcutta, varies from Rs. 20 to Rs. 25 per ton; and to Rangoon, Rs. 22-8 to Rs. 26 per ton.

APPENDICES.

APPEN

Experimental Bamboo Sample Plots in the

(These figures refer to the Hlaing Yoma,

Locality.	Area of sample plot, in acres.	Type of Forest.	SPECIES.						NUMBER OF EXPERIMENTAL STEMS CUT.	
			CEPHALOSTACHYUM PERGRACILE (*Tinwa*).			BAMBUSA POLYMORPHA (*Kyathaung*).				
			Number of clumps counted.	Number of new stems counted.	Number of old stems counted.	Number of clumps counted.	Number of new stems counted.	Number of old stems counted.	Cephalostachyum pergracile (*Tinwa*).	Bambusa polymorpha (*Kyathaung*).
Compartment 28, Hlaing Yoma Reserve, Rangoon Division.	1	Teak and bamboo forest.	191	685	1,995	5	30	81		
Compartment 61, Yindaik Forest, Okkan Reserve, Rangoon Division.	1	Ditto	173	224	1,125	56	162	415	100	100
Ditto Ditto .	1	Ditto	119	198	668	79	230	582		
Ditto ditto .	1	Ditto	196	452	1,397	29	83	176		
Compartment 76, Wèywa Forests, Thonzé Reserve, Tharrawaddy Division.	1	Ditto	38	76	182	71	259	595		
Compartment 70, Wèywa Forests, Thonzé Reserve, Tharrawaddy Division.	1	Ditto	81	126	385	59	226	469		
Compartment 62, Wèywa Forests, Thonzé Reserve, Tharrawaddy Division.	1	Ditto	145	260	1,000	28	61	255		
Ditto ditto .	1	Ditto	96	178	536	72	242	671	100	100
Compartment 63, Wèywa Forests, Thonzé Reserve, Tharrawaddy Division.	1	Ditto	79	118	355	82	260	647		
Ditto ditto .	1	Ditto	135	205	702	63	145	419		
TOTAL .	10	..	1,253	2,522	8,345	544	1,698	4,310	200	200
Average	1	..	125	252	834	54	170	431	Average of one stem.	

NOTE 1.—New stems are those which have come into existence in one monsoon but have not

DIX I.

Rangoon and Tharrawaddy Forest Divisions of Lower Burma.

Okkan and Thonzé Bamboo areas.)

AVERAGE SIZE OF ONE STEM.				TOTAL WEIGHT OF GREEN STEMS, IN LBS.						TOTAL WEIGHT OF DRY INTERNODES, IN LBS.		YIELD OF DRY INTERNODES, IN LBS. PER ACRE.		
CEPHALOSTACHYUM PERGRACILE (*Tinwa*).		BAMBUSA POLYMORPHA (*Kyathaung*).		CEPHALOSTACHYUM. PERGRACILE (*Tinwa*).			BAMBUSA POLYMORPHA (*Kyathaung*).							
Length in feet.	Mid-girth in inches.	Length in feet.	Mid-girth in inches.	Internodes.	Nodes.	Total.	Internodes.	Nodes.	Total.	Cephalostachyum pergracile (*Tinwa*).	Bambusa polymorpha (*Kyathaung*).	Cephalostachyum pergracile (*Tinwa*).	Bambusa polymorpha (*Kyathaung*.)	Total in lbs. per acre.
27·6	5·9	32·8	8·8	1,098	147	1,245	2,039	315	2,354	840	1,414	8,254	9,255	17,509
28·6	5·6	33·6	8·9	862	211	1,073	2,228	404	2,722	674	1,670			
56·2	11·5	66·4	17·7	1,960	358	2,318	4,267	809	5,076	1,514	3,084	..	..	
28·1	5·7	33·2	8·8	9·8	1·8	11·6	21·3	4·1	25·4	7·6	15·4	8,254	9,255	17,509

Passed through a second rains. Old stems are those which have passed through two or more rainy seasons.

APPEN

Experimental Bamboo Sample Plots in the Toungoo and

(These figures refer to the Pyinmana and

Locality.	Area of sample plot, in acres.	Type of Forest.	SPECIES.						NUMBER OF EXPERIMENTAL STEMS CUT.	
			CEPHALOSTACHYUM PERGRACILE (*Tinwa*).			BAMBUSA POLYMORPHA (*Kyathaung*).				
			Number of clumps counted.	Number of new stems counted.	Number of old stems counted.	Number of clumps counted.	Number of new stems counted.	Number of old stems counted.	Cephalostachyum pergracile (*Tinwa*).	Bambusa polymorpha (*Kyathaung*).
*Compartment 104 (on banks of the Kabaung river), Toungoo Division.	5*	Teak and bamboo.	..	..	..	235	752	3,915	..	..
*Compartment 104 (on slopes above the Kabaung), Toungoo Division.	1·7*	Ditto	..	..	..	146	204	2,432	..	..
*Compartment 11 (on upper slopes), Bondaung Reserve, Toungoo Division.	0·9*	Ditto	..	..	..	80	170	1,267	..	..
* Ditto ditto .	1·1*	Ditto	..	..	..	93	192	1,207	50	60
* Ditto ditto .	1·6*	Ditto	..	..	..	127	266	2,231	..	..
Compartment 16, Yanaungmyin Reserve, Pyinmana Division.	1	Ditto	..	..	..	112	479	1,212	150	140
Compartment 8, Yanaungmyin Reserve, Pyinmana Division.	1	Ditto	13	14	53	97	313	1,261		
Compartment 19, Yanaungmyin Reserve, Pyinmana Division.	0·5	Ditto	50	75	279	48	192	599		
Ditto ditto .	2	Ditto	530	1,012	2,144	36	203	637		
Compartments 15 and 19, Yanaungmyin Reserve, Pyinmana Division.	2	Ditto	212	424	1,049	65	412	1,562		
TOTAL .	16·8	..	805	1,525	3,525	1,039	3,183	16,323	200	200
Average for one acre . .	1	..	145†	277†	641†	62	189	971	Average for one stem.	

NOTE I.—Figures marked thus † are averages for

NOTE II.—Figures marked * are from enumerations made by

NOTE III.—New stems are those which have come into existence in one

DIX II.

Pyinmana Forest Divisions of Burma.

Toungoo Bamboo areas.)

AVERAGE SIZE OF ONE STEM.				TOTAL WEIGHT OF GREEN STEMS IN LBS.						TOTAL WEIGHT OF DRY INTERNODES, IN LBS.		YIELD OF DRY INTERNODES, IN LBS. PER ACRE.		
CEPHALOSTACHYUM PERGRACILE (*Tinwa*).		BAMBUSA POLYMORPHA (*Kyathaung*).		CEPHALOSTACHYUM PERGRACILE (*Tinwa*).			BAMBUSA POLYMORPHA (*Kyathaung*).							
Length in feet.	Mid-girth in inches.	Length in feet.	Mid-girth in inches.	Internodes.	Nodes.	Total.	Internodes.	Nodes.	Total.	Cephalostachyum pergracile (*Tinwa*).	Bambusa polymorpha (*Kyathaung*).	Cephalostachyum pergracile (*Tinwa*).	Bambusa polymorpha (*Kyathaung*).	Total in lbs. per acre.
..	..	53*	11*											
..	..	44*	11*											
..	..	..	..											
42	6·6	52	10·1	1,025	161	1,186	2,683	514	3,197	705	1,620	9,351	29,696	39,047
34	6·1	46	8·3	2,111	416	2,527	4,922	1,190	6,112	1,704	3,502			
76	12·7	195	40·4	3,136	577	3,713	7,605	1,704	9,309	2,409	5,122	..	..	..
38	6·3	49	10·1	15·7	2·9	18·6	38·0	8·5	46·5	12·05	25·6	9,351	29,696	39,047

5·5 acres.
Mr. Borie, Divisional Forest Officer, Toungoo.
monsoon but have not passed through a second rains. Old stems are those which have passed through two or more rainy seasons.

APPENDIX III.

Experimental Bamboo Sample Plot taken in the Arakan Forest Division of Lower Burma.

(These figures refer to the Seik, Kaladan and Lemru Bamboo Catchment areas.)

Locality.	Area of sample plot, in acres.	Type of Forest.	SPECIES. MELOCANNA BAMBUSOIDES. Number of culms.	Number of experimental stems cut on which the yield is based.	AVERAGE SIZE OF ONE STEM. Length in feet.	AVERAGE SIZE OF ONE STEM. Mid-girth in inches.	Total weight green, in lbs.	Total weight dry, in lbs.	Yield per acre, in lbs.	REMARKS.
Lemru Catchment area, Arakan Division.	1	Pure bamboo forest cut over 10 years ago for Taungya cultivation.	10,575	*10,575	22	3·8	27,404	16,576	16,576	The growth in the area in which the sample plot was cut, was slightly under the average.

*NOTE I.—All the bamboos were cut down over one acre and counted and weighed green and dry.

NOTE II.—This sample plot was taken by Mr. Walker, Divisional Forest Officer, Arakan.

NOTE III.—New stems are those which have come into existence in one monsoon but have not passed through a second rains. Old stems are those which have passed through two or more rainy seasons.

APPENDIX IV.

Experimental Bamboo Sample Plots taken in the North and West Kanara Divisions of the North Kanara Collectorate, Bombay Presidency.

APPEN

Experimental Bamboo Sample Plots taken in the North and West Kanara

(These figures refer to the Gangavalli,

Serial No.	Locality.	Area of sample plots, in acres.	Class.	Type of Forest.	SPECIES. BAMBUSA ARUNDINACEA. No. of clumps counted.	No. of new stems counted.	No. of old stems counted.	No. of experimental stems cut.
1	Compartment 45, Block XXV. Gangavalli Forests, West Kanara Division..	2	1st class bamboo area.	Moist deciduous forest with many *Bambusa arundinacea.*	90	291	872	100
2	Compartment 44, Block XXV. Gangavalli Forests, West Kanara Division.	1		Ditto ditto	45	112	224	52
3	Compartment 7, Block XXIV. Gangavalli Forests, West Kanara Division.	1		Moist deciduous with large clumps of bamboos.	110	206	335	102
4	Block XXV, Gangavalli Forests, West Kanara Division.	1		Ditto ditto	55	118	201	100
5	Compartment 70, Block XXIV. West Kanara Division.	1		Ditto ditto	68	149	284	50
6	Compartment 62, Block XXIV. West Kanara Division.	1		Ditto ditto	78	153	223	50
	Average per acre in 1st class area	1		..	64	147	306	Average of one stem.
7	Compartment 8, Block XXIV. Gangavalli Forest, West Kanara Division.	1	2nd class bamboo area.	Dry deciduous	86	113	178	50
8	Compartment 9, Block XXIV. Gangavalli Forest, West Kanara Division.	2·4		Ditto	46	165	242	50
	Average per acre in 2nd class area	1		..	39	82	124	Average of one stem.
9	Gund Forests, North Division, Kanara.	5		Moist teak and bamboo forest, the growth of bamboos very fine.	144	271	1,860	10
	Average per acre	1		..	29	54	372	Average of one stem.

NOTE I.—The figures arrived at by enumerations made in the Gangavalli Valley have also been utilized in calculating
NOTE II. —New stems are those which have come into existence in one monsoon but have not passed through a second

DIX IV.

Forest Divisions of the North Kanara Collectorate, Bombay Presidency.

Kala Nadi and Gund Slopes Bamboo areas.)

AVERAGE SIZE OF ONE STEM.		Total weight green, in lbs.	Total weight dry, in lbs.	Weight of dry internodes, in lbs.	Weight of dry nodes and saw-dust, in lbs.	Yield of dry internodes per acre, in lbs.	REMARKS.
Length in feet.	Mid-girth in inches.						
54	10·3	7,094	5,152	4,300	852	24,983	1st class bamboo forest above average.
48	9·2	3,269	2,359	1,975	384	12,762	1st class a fair average.
36	7·1	2,468	1,702	1,560	232	8,274	Ditto.
46	7·4	3,816	2,986	2,610	376	8,326	Ditto.
32	7·5	2,118	1,242	1,081	161	9,361	Ditto.
24	7·1	1,710	1,111	989	122	7,437	1st class but slightly below the average.
40	8·1	45	32	27	5	10,163	
25·2	5·9	670	528	452	76	2,631	A poor bamboo area.
42·2	7·7	1,435	1,064	895	169	1,320	A poor bamboo area on higher slopes.
33·7	6·8	21	15·9	13·5	2·4	1,975	
47	12·5	1,387	1,146	680	Not known.	28,968	
47	12·5	138·7	114·6	68·0	..	28,968	

the yield in the neighbouring valley of the Kala Nadi.
rains. Old stems are those which have passed through two or more rainy seasons.

APPEN

Experimental Sample Plots taken in the East Kanara Forest

(These figures refer to the

Locality.	Area of sample plot, in acres.	Type of forest.	SPECIES.			No. of experimental stems cut.
			BAMBUSA ARUNDINACEA.			
			No. of clumps counted.	No. of new stems counted.	No. of old stems counted.	
Mungod Forests, East Kanara Forest Division.	5	Dry deciduous bamboo forest.	404	429	3,239	100
Average per acre	1	.. ..	81	86	648	Average of one stem.

NOTE I.—These are the averages for 5 separate sample plots.
NOTE II.—These sample plots were taken by Mr. Butterworth, Assistant Conservator of Forests.
NOTE III.—New stems are those which have come into existence in one monsoon but have not passed

APPEN

Experimental Bamboo Sample Plots in the South Kanara and

(These figures refer to the Uppinangadi

Locality.	Area of sample plot, in acres.	Type of forest.	SPECIES.			No. of experimental stems cut on which the yield is based.
			BAMBUSA ARUNDINACEA.			
			No. of clumps counted.	No. of new stems counted.	No. of old stems counted.	
Compartment II, Coupe 4, Uppinangadi Range, South Canara Division.	2	Moist deciduous with many *Bambusa arundinacea.*	26	82	198	100
Average per acre	1	..	13	41	99	Average of one stem.
Kumari Forest, Kanoth Range, North Malabar Division.	1	Ditto	30	160	438	100
Ditto ditto . .	1	Ditto	50	170	331	100
Average yield per acre	1	..	40	165	384	Average of one stem.
Porkado Forest, Nilambur Range, South Malabar Division.	1	Ditto	45	125	287	100
Kanakatha Range, South Malabar Division.	1	Ditto	46	131	248	..
Average per acre	1	..	45	128	267	Average of one stem.

NOTE I.—The yield is not based on figures derived from these enumerations but on the enumerations
NOTE II.—New stems are those which have come into existence in one monsoon but have not passed

DIX V.

Division of the North Kanara Collectorate, Bombay Presidency.

Mungod Bamboo area.)

AVERAGE SIZE OF ONE STEM.		Total weight green, in lbs.	Total weight dry, in lbs.	Weight of dry internodes, in lbs.	Weight of dry nodes and saw-dust, in lbs.	Yield of dry internodes per acre, in lbs.	REMARKS.
Length in feet.	Mid-girth in inches.						
38	8·8	5·759	Not known.	3,720	Not known.	5,461	
38	8·8	57·6	..	37·2	..	5,461	

through a second rains. Old stems are those which have passed through two or more rainy seasons.

DIX VI.

North and South Malabar Forest Divisions of the Madras Presidency.

Kanoth and Nilambur Bamboo areas.)

AVERAGE SIZE OF ONE STEM.		Total weight green, in lbs.	Total weight dry, in lbs.	Weight of dry internodes, in lbs.	Weight of dry nodes, sawdust, etc., in lbs.	Yield of dry internodes per acre, in lbs.	REMARKS.
Length in feet.	Mid-girth in inches.						
55	10	8,765	5,803	4,679	1,124	6,550	Taken on undulating ground.
55	10	87·6	58	46·8	11·2	6,550	
61	11·1	12,525	7,867	6,487	1,380	38,792	Taken in moist deciduous bamboo forest, few new clumps.
51	10·3	7,472	4,873	4,197	676	21,026	A fair number of young clumps.
56	10·7	99·9	63·7	53·4	10·3	29,909	
63	10·2	10,995	7,206	6,200	1,006	25,544	Taken in heavy bamboo forest.
..	..	..	...	..	..	..	
63	10·2	109·0	72·1	62·0	10·1	25,544	

made by the Working-Plans Officer over an area of 426 acres.
through a second rains. Old stems are those which have passed through two or more rainy seasons.

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